

WHAT IS CLAIMED IS:

53
a1

5

1. A disk drive comprising:
a head adapted to fly above the surface of a
rotating disk for reading or writing data on the disk;
(or continual?) contact of the head with the surface of
the disk;

10

a sensor which detects disturbance; and
a controller for, in the event that the continuous
(or continual) contact of the head with the surface of
the disk is detected by the collision monitor and
disturbance is detected by the sensor, performing
a head contact avoidance operation.

15

2. A disk drive according to claim 1, wherein the
controller performs the contact avoidance operation by
increasing the rotational speed of the disk above its
normal rotational speed to thereby increase the flying
height of the head above the rotating disk.

20

3. A disk drive according to claim 2, wherein the
controller restores the disk to its normal rotational
speed to thereby restore the head to its original
state.

53
a1

25

4. A disk drive according to claim 1, wherein the
controller performs the contact avoidance operation by
carrying out an unload operation of moving the head to
a given position outside the disk.

5. A disk drive according to claim 4, wherein

the controller loads the head from the given position outside the disk to a given position above the disk to thereby restore the head to its original state.

5
2-12
6. A disk drive according to claim 1, wherein the controller includes storage means for storing the frequency at which the contact avoidance operation is performed and, when the frequency of the contact avoidance operation is beyond a permissible range, carries out a given emergency operation.

10
7. A disk drive according to claim 1, wherein the collision monitor determines that the head is in continuous contact with the surface of the disk on the basis of a change in a read signal corresponding to servo data prerecorded on the disk when it is read by the head.

15
8. A disk drive according to claim 1, wherein the sensor is one for sensing air pressure.

20
9. A disk drive according to claim 8, wherein the controller carries out a given emergency operation in the event that the sensor detects, as the disturbance, air pressure outside a permissible range which is abnormally low in comparison with the standard air pressure.

25
10. A disk drive according to claim 1, wherein the sensor is an acceleration sensor for detecting an externally applied shock.

11. A disk drive according to claim 10, wherein

the controller performs an emergency operation of stopping the move control of the head at the start of the contact avoidance operation and, in the event that a shock is detected by the acceleration sensor,
5 performing a forced unload operation of forcibly moving the head to a given position outside the disk.

12. A disk drive according to claim 1, wherein the sensor is one for detecting ambient temperature.

13. A disk drive according to claim 12, wherein
10 the controller carries out a given emergency operation in the event that the sensor detects, as the disturbance, temperature outside a permissible range which is abnormal in comparison with the standard temperature.

15 14. For use with a disk drive having a head adapted to fly above the surface of a rotating disk for reading or writing data on the disk, a method of avoiding contact or collision of the head with the surface of the disk, the method comprising:

20 detecting continuous contact of the head with the surface of the disk;

detecting disturbance to the disk drive; and

performing a head contact avoidance operation in the event that the continuous contact of the head with
25 the surface of the disk is detected and disturbance is detected.

15. The method according to claim 14, further

comprising the step of restoring the head to its original state after the completion of the head contact avoidance operation.

5.0 2.0 } 16. The method according to claim 14, further comprising the performing a given emergency operation when the degree of the disturbance is outside a permissible range.

10 17. The method according to claim 14, further comprising the stopping restoring the head to its original state when the degree of the disturbance is outside a permissible range.

15 18. The method according to claim 14, further comprising the performing a forced unload operation of stopping the move control of the head at the start of the contact avoidance operation and, in the event that disturbance is detected, forcibly moving the head to a given position outside the disk.

20 19. The method according to claim 14, wherein the contact avoidance operation comprises increasing the rotational speed of the disk above its normal rotational speed to thereby increase the flying height of the head above the rotating disk.

25 20. The disk drive according to claim 14, further comprising, as the head contact avoidance operation, increasing the rotational speed of the disk above its normal rotational speed to thereby increase the flying height of the head above the rotating disk; and, after

the completion of the head contact avoidance operation,
restoring the disk to its normal rotational speed to
thereby restore the head to its original state.